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Report on Mt. St. Elias. By W. H. Dall. (From the U. S. Coast Survey Report for 1875.) With a map and sketches. Washington, D. C. July, 1875. 4to, pp. 32.

Notes on the Yucca Borer (*Megathymus yuccæ*). By C. V. Riley. (Trans. Acad. Sciences, St. Louis, January, 1876.) St. Louis. 1876. 8vo, pp. 23. With cuts.

Note sur les Mollusques de la Formation Post-Pliocène de l'Acadie. Par G. F. Matthew. Bruxelles. 1875. 8vo, pp. 19.

On the Surface Geology of New Brunswick. By G. F. Matthew. (Canadian Naturalist, vii., No. 8.)

Remarks on the Variation in Form of the Family Strepomatidæ. With Descriptions of New Species. By A. G. Wetherby. Cincinnati. 1875. 8vo, pp. 12. With a plate.

Descriptive Catalogues of the Photographs of the United States Geological Survey of the Territories for the Years 1869 to 1875 inclusive. Second Edition. W. H. Jackson, photographer. Washington, D. C. 1875. 8vo, pp. 81.

GENERAL NOTES.

BOTANY.¹

ASTRAGALUS ROBBINSII GRAY. — As some botanists seem to suppose this plant extinct, it may be of interest to them to know that the station has never been lost, and that at any time since Oakes used to collect it until now, fine specimens have been easily obtained. It is abundant over the very limited area where it grows, and has never been found anywhere else, I believe. Few plants are so exceedingly restricted in their range, for its habitat consists only of a space about five hundred feet long and from fifty to one hundred feet wide. This is on one bank of the Winooski River, near Burlington, where the limestone ledges are overflowed by every freshet. This limestone is very hard and compact, and full of crevices which are filled with sand mixed with a little mold. In these crevices, or less often in hollows that have been filled with earth, the astragalus grows, sending its roots from six inches to a foot or even more down into the crevice. It does not, so far as I have noticed, ever grow higher on the bank of the river than the spring floods reach, nor away from the exposed limestone rock. *Potentilla fruticosa* is found abundantly in the same location, and less abundantly *Anemone multifida* and *Campanula rotundifolia*, and also several less numerous species of *Compositæ*, *Salix*, etc. — G. H. PERKINS.

THE POTATO-BLIGHT. — A very important step has recently been made in our knowledge of the history of this disease. It is about thirty years since it was first clearly traced by M. Montagne in France, and the Rev. M. J. Berkeley in England, to a parasitic fungus, *Botrytis* or *Peronospora infestans*, which first attacks the haulms and leaves, and eventually causes the decay of the tubers. Two modes of asexual reproduction, by means of "simple spores" or conidia, and actively moving swarmspores or zoöspores which penetrate the stomata of the host, have

¹ Conducted by PROF. G. L. GOODALE.

long been familiar to botanists; but it has been reserved for the well-known mycologist, Mr. Worthington G. Smith, of London, to discover quite recently the sexual mode of reproduction, which is quite analogous to that already known in other species of the same genus. On the mycelium, within the decaying tissues of the potato-plant, are produced the true sexual organs, the antheridia and oögonia, each of the latter containing a germinal cell or oösphere which is fertilized by a fecundating tube put out by the antheridium, which discharges its contents into the protoplasm of the oösphere, thus converting the latter into an oöspore or "resting spore." The germination of this latter body has not yet been observed. The chief point of practical importance in this discovery is that it disposes of the theory which had been started of an "alternation of generations," namely, that the spores of the potato-fungus germinate on some other plant than the potato, producing a fungus which had not been recognized as identical with the *Peronospora*, the spores of this again producing the potato-fungus. The ground which has to be worked over for the destruction of the disease is thus considerably limited. — A. W. B.

NEW CLASSIFICATION OF CRYPTOGAMS. — In the last edition of his *Lehrbuch der Botanik*, Prof. J. Sachs proposes a new classification of the lowest section of cryptogams, which he distinguishes as *Thallophytes*, including the classes, hitherto considered distinct, of Algæ, Fungi, Lichens, and Characæ. He divides the section into four classes, each consisting of two parallel series, the one containing chlorophyll and commonly known as Algæ (including Characæ); the other destitute of chlorophyll and commonly known as Fungi (including Lichens). The classes are as follows: Class 1. PROTOPHYTA. This class comprises the simplest known forms of vegetable life, unicellular, or the cells connected into filaments, rarely into more complicated tissues; no mode of sexual reproduction is known. To the chlorophyll-containing series belong the *Chroococcaceæ*, *Nostocaceæ*, *Oscillatorieæ*, *Rivularieæ*, *Scytonemeæ*, and the *Palmellaceæ* (in part); to that destitute of chlorophyll the *Schizomycetes* (bacteria) and *Saccharomyces* (yeast). Class 2. TYGOSPOREÆ. Asexual propagation various; sexual propagation by means of gygospores, the result of a process of conjugation. This is divided into two sections. In the first the conjugating cells are locomotive, as in the *Volvocineæ* and *Hydrodictyæ* (containing chlorophyll), and the *Myxomycetes* (destitute of chlorophyll); the second section includes the forms in which the conjugating cells are stationary, namely, in the first series the *Conjugatæ* (comprising the *Mesocarpeæ*, *Tyguerneæ*, *Desundiæ*, and *Diatomaceæ*); in the second series the *Tygomycetes* (comprising the *Mucorim* and *Piptocephalidæ*). Class 3. OÖSPOREÆ. Reproduction by oögonia, containing an oösphere or embryonic cell, becoming an oöspore or resting-spore by the act of impregnation. In the series containing chlorophyll are *Sphaeroplæa*, *Vaucheria*, the *Oedogoneæ*, and *Fucaceæ*; in the series destitute of chlorophyll the *Saprolegineæ* and *Peronosporææ*.

Class 4. CARPOSPOREÆ. A distinct organ, or "sporocarp," results from the process of the fertilization of the female organ, or *carpogonium*. In the first series are the *Coleochætæ*, *Florideæ*, and *Characææ*; in the second the *Ascomycetes* (including Lichens), *Aecidiomycetes*, and *Pasidiomycetes*. This classification of the lower Cryptogams appears to be founded on sounder principles and a more thorough knowledge of their structure, and especially their mode of reproduction, than any hitherto proposed. — A. W. B.

"TWINES WITH THE SUN." — A correspondent writes to inquire whether this expression, frequently applied to certain twining plants, is correct. He suggests that it might not apply to plants growing in the southern hemisphere. The expression "with the hands of a watch" is conveniently employed in place of the above, and seems to remove all possible ambiguity. If one wishes to guard more completely against captious quibbling, he may amplify the expression thus: "in the direction taken by the hands of a watch held face upwards, in front of the observer." — L.

SETS OF NAMED FUNGI. — We are glad to be able to state to the readers of the NATURALIST that Mr. Byron D. Halsted, Assistant in Botany at the Bussey Institution, Jamaica Plain, can furnish to any who desire, at \$5.00 each, sets of fungi numbering fifty well-determined specimens in each set.

BOTANICAL PRIZES. — The following prizes were awarded in 1875, by the French Academy.

The Desmazières prize in cryptogamic botany was divided between M. Émile Bescherelle for his Mosses of Mexico and New Caledonia, and M. Eugène Fournier for his Ferns of the same countries. From the report we learn that three hundred and fifty-nine species of Mexican mosses have been identified by Schimper and Bescherelle. In New Caledonia there have been found one hundred and thirty species. Fournier gives five hundred and ninety-five species of Mexican ferns, one hundred and seventy-eight of which are peculiar to Mexico. He reports two hundred and fifty-nine species of ferns in New Caledonia.

The Barbier prizes for discoveries in medicine and botany were given to Albert Robin and M. Hardy for their investigation of the new drug, jaborandi, the leaves of *Pilocarpus pinnatus*, a plant of the rue family.

BOTANICAL PAPERS IN RECENT PERIODICALS. — *American Journal of Science and Arts*, February, 1876. Dr. Gray criticises at some length a recent paper by Naudin, On the Nature of Heredity and Variability in Plants.

Bulletin of the Torrey Botanical Club, New York, January, 1876. The question of the nativity in North America of some members of the gourd family is treated of at length by J. Hammond Trumbull, and on purely philological grounds the conclusion is reached that at least three species bearing Indian names were not known until they were

found and described in North America. Professor Eaton describes *Ophioglossum palmatum* Plumier, a rare fern detected by Dr. Chapman in Florida. *Cyperus Wolfii* is described by A. Wood.

American Agriculturist, February, 1876. How Flowers are Fertilized, by Prof. Asa Gray (devoted to compound flowers, with cuts of *Leptosyne*, a plant from the sea-shore in the southern part of California).

Nature, January 13, 1876. Fertilization of Flowers by Insects, xii. Further Observations on Alpine Flowers, by Herman Müller (with cuts of the corolla of *Rhinanthus alectorolophus*).

The Canadian Journal of Science, Literature, and History, Toronto, December, 1875. Plants of the Eastern Coast of Lake Huron, by John Gibson, B. A., F. G. S., and John Macoun, M. A. (A list comprehending the Phænogams, vascular Cryptogams, and the Mosses of the eastern coast of Lake Huron, and their distribution through the northern and western portions of British North America.)

The Monthly Microscopical Journal, January, 1876. Reproduction in the Mushroom Tribe, by W. G. Smith, F. L. S. (an account of reproduction in *Coprinus radiatus*).

Comptes rendus, December 20, 1875. Remarks on the Theories of the Formation of Saccharine Matters in Plants, and especially in the Beet, by Cl. Bernard. ("In the leaves of plants there exist sometimes starch, or dextrine, or glucose, or cane sugar, or inverted sugar. What has been said relative to the transfer and transformation of these saccharoid principles from the leaves to other parts of the plant has been based on hypothetical views, and not on experiments.") Boussingault remarked that the sugar of *Agave* is chiefly saccharose, formed and treasured up in the leaves.

Bulletin de la Société chimique de Paris, December 20, 1875. On the Presence of a Crystallizable Sugar in Germinating Cereals, by G. Kuhnemann. (The author isolated a small amount of sugar identical with saccharose, from sprouted barley.) Researches on Sugar and Dextrin in Barley, by G. Kuhnemann. (The author found no dextrine or glucose, but a crystallizable sugar and a substance to which he gives the name *sinistrine*.)

Bulletin mensuel de la Société d'Acclimatation, September, 1875. Useful Plants of Japan, by Dr. Vidal. (This paper enumerates the plants of Japan which yield food, drugs, and useful products.)

Atti della Società Italiana di Scienze Naturali, Vol. XVII. Fasc. III, 1875. Later Observations and Considerations respecting Dichogamy in the Vegetable Kingdom, by F. Delpino. The third and fourth parts of the work noticed in the *NATURALIST* for January, 1876, page 42.

Öfversigt af Kongl. Vetenskaps Akad. Förhandlingar, Stockholm, 1874. Descriptions of Mosses collected by N. J. Anderson during the Voyage of the Frigate *Eugenie*, 1851-53, by John Angstrom. (Includes *Hepaticæ* as well as true *Musci*.)

Flora, 1875, No. 29. Dr. J. Müller gives, in the form of an analytical key, some account of new Brazilian *Rubiaceæ*. (This is continued in No. 30.) Dr. Leopold Dippel replies, with great asperity, to a recent communication by Dr. Sanio respecting the nature of the cell-wall in cambium. No. 31. Dr. Lad. Celakovsky, On the Intercalated Epipetalous Circle of Stamens (continued in No. 32, not yet finished). On the Genesis of Coloring Matters in Plants, by Dr. Carl Kraus, of Triesdorff (treating of the relations of *chromogen* to the colors of flowers, etc.). No. 33. Lindberg's new classification of the fifty-nine genera of European *Hepaticæ* is reprinted from a memoir in *Acta Societatis Scientiarum Fennicæ* X. President's Clark's lecture On the Circulation of Sap in Plants, 1874, is criticised at some length. The reviewer is discriminating, and points out some possible errors of interpretation, but appears to have thoroughly appreciated the wide range of experiments, and the energy with which the work was done.

Botanische Zeitung, No. 52. On the Development of Cambium, by Dr. W. Velten (examining Prof. N. J. C. Müller's views in regard to the development of Cambium). Reports of Societies: *Berlin*: Brefeld on Development of Certain Fungi. This number contains an interesting obituary notice of Dr. Bartling, author of *Ordines Naturales Plantarum* (1830), and professor at Göttingen. Dr. Bartling was born at Hanover, December 9, 1798, and died November 19, 1875. No. 1 (January 7, 1876). On the Influence of Light on the Color of Flowers, by E. Askenasy. (This account of experiments is not yet finished.) A few notices of plants by Ascheron. Professor Pfeffer criticises with the greatest severity, in a book-notice, the recent paper on vegetable movements, by E. Heckel, of Montpellier. He insists that Heckel has not observed ordinary caution in his work, and his results are wholly untrustworthy. A notice of the paper and the review will be soon given in a general note.

ZOOLOGY.

BARTRAMIAN NAMES AGAIN: AN EXPLANATION.—In Dr. Coues's reply to my critique upon his article on Bartram's ornithological names he seems to have misunderstood my admissions, inasmuch as he says I have yielded the very point I wished to refute. The point at issue is not whether "Bartram's identifiable, described, and binomially named species" are entitled to recognition, for no one would be foolish enough to deny that. The few names of this character in Bartram's long list, or the "five or six" among the *twenty* (not *ten*) Dr. Coues claims as Bartramian in origin, I have of course freely admitted. But I do not see how excluding about three fourths of the names claimed by Dr. Coues as properly originating with Bartram is admitting the main point at issue, which is the recognition of species *not* identifiably described. The *real* difference between us is as to what constitutes a description. While Dr. Coues considers that such vague references to species as